Revised Air Quality
Emergency Episode Plan
for the District of Columbia

March 2014

DISTRICT DEPARTMENT OF THE ENVIRONMENT

green forward

Prepared by:
Monitoring and Assessment Branch
Air Quality Division
District Department of the Environment
1200 First Street NE, Fifth Floor
Washington, DC 20002

TABLE OF CONTENTS

This Emergency Episode Plan for the District of Columbia (District) is designed to meet the requirements of Subpart H of 40 C.F.R. Part 51 (Prevention of Air Pollution Emergency Episodes). Its purpose is to establish criteria for determination of the existence of an emergency episode. It is also designed to prevent the excessive buildup of air pollutants during air pollution episodes, thereby preventing the occurrence of an emergency due to the effects of these pollutants on the health of persons. This plan is intended to replace the previous state-adopted Emergency Episode Plan from 1976 and is being submitted to the U.S. Environmental Protection Agency (EPA) for approval into the District's State Implementation Plan (SIP).

1.0 CLASSIFICATION

EPA requires emergency episode plans for Priority I areas. The District is a Priority I region for particulate matter (PM_{10}), sulfur oxides (SO_x), carbon monoxide (CO), and ozone (O_3), as indicated at 40 C.F.R. § 52.471:

Figure 1. Priority Designations per NAAQS Pollutant

Air Quality Control Region	Particulate matter	Sulfur oxides	Nitrogen dioxide	Carbon monoxide	Ozone
National Capital Interstate	I	I	III	I	I

This is because, at one point in time, ambient concentrations of these pollutants in the District were greater than the concentrations at 40 C.F.R. § 51.150(b), as included in the following chart:

Figure 2. Concentration Levels to be Classified as a Priority I Region

Pollutant	**Level**	**Averaging Time**
Sulfur dioxide	100 µg/m^3 (0.04 ppm)	Annual arithmetic mean
	455 µg/m^3 (0.17 ppm)	24-hour maximum
Particulate matter	95 µg/m^3	Annual geometric mean
	325 µg/m^3	24-hour maximum
Carbon monoxide	55 mg/m^3 (48 ppm)	1-hour maximum
	14 mg/m^3 (12 ppm)	8-hour maximum
Ozone	195 µg/m^3 (0.10 ppm)	1-hour maximum
Nitrogen dioxide	*100 µg/m^3 (0.06 ppm)*	*Annual arithmetic mean*

Therefore, the District is required to have an Emergency Episode Plan for SO_x (represented as sulfur dioxide or SO_2), PM, CO, and O_3. This plan addresses all four pollutants.

2.0 SIGNIFICANT HARM LEVELS

Each plan for a Priority I region includes a contingency plan that, at a minimum, provides for taking action necessary to prevent ambient pollutant concentrations at any location in such region from reaching the "significant harm levels" at 40 C.F.R. § 51.151, which are also provided in Figure 3:

Figure 3. Significant Harm Levels

Pollutant	Level	Averaging Time
Sulfur dioxide	2,620 µg/m^3 (1.0 ppm)	24-hour average
Particulate matter	600 µg/m^3	24-hour average
Carbon monoxide	144 µg/m^3 (125 ppm)	1-hour
	86.3 µg/m^3 (75 ppm)	4-hour average
	57.5 µg/m^3 (50 ppm)	8-hour average
Ozone	1,200 ug/m^3 (0.6 ppm)	2-hour average

3.0 CONTINGENCY PLAN

Announcement of the initiation and termination of an episode stage will be made by the Mayor. Conditions justifying the proclamation of an internal episode watch, alert, warning, or emergency will be deemed to exist whenever the Mayor determines that the accumulation of air contaminants in any place is attaining or has attained levels that could, if such levels are sustained or exceeded, lead to a threat to the health of the public. Any episode stage may be declared on the basis of deteriorating air quality if the Mayor determines that action is required. Pollutant concentration will in all cases be measured by EPA-approved methods.

3.1 Internal Episode Watch

The declaration of an Internal Episode Watch will be activated when there is a National Weather Service advisory that an Atmospheric Stagnation Advisory is in effect or there is an equivalent local forecast of stagnant atmospheric condition. The District relies on AIRNow and Clean Air Partners to acquire frequent forecasts of air quality conditions.

3.1.1 AIRNow

EPA calculates an Air Quality Index (AQI) for five major air pollutants regulated by the Clean Air Act: sulfur dioxide (SO_2), PM, CO, O_3, and nitrogen dioxide (NO_2). EPA along with the National Oceanic and Atmospheric Administration (NOAA), the National Park Service (NPS), and tribal, state, and local agencies developed the AIRNow website to provide the public with easy access to national air quality information. The website offers daily AQI forecasts and real-time AQI conditions for over 300 cities across the U.S. including the District.

According to the AIRNow website, "the air quality data used in these maps and to generate forecasts are collected using either federal reference or equivalent monitoring techniques or techniques approved by the state, local or tribal monitoring agencies. Since the information needed to make maps must be as 'real-time' as possible, the data are displayed as soon as practical after the end of each hour. Although some preliminary data quality assessments are performed, the data as such are not fully verified and validated through the quality assurance procedures that monitoring organizations use to officially submit and certify data on the EPA Air Quality System (AQS). Therefore, data are used on the AIRNow Web site only for the purpose of reporting the AQI. Information on the AIRNow web site is not used to formulate or support

regulation, guidance or any other Agency decision or position."[1] The AIRNow website also posts information on "action days" when the AQI gets into the unhealthy range.[2]

3.1.2 Clean Air Partners

In addition, a regional organization called Clean Air Partners issues daily air quality forecasts that can be received by email or mobile device for the Metropolitan Washington region. Air quality forecasts for this "Enviroflash" service are provided by the Metropolitan Washington Council of Governments (MWCOG), Maryland Department of the Environment, Virginia Department of Environmental Quality, and District Department of the Environment. Clean Air Partners also issues AirAlerts when the Air Quality Index reaches Code Orange or Code Red based on real-time monitoring data collected by states in the region and the District. Clean Air Partners is chartered by the MWCOG.

3.2 Alert

An alert status will be declared when any one of the following pollutant concentrations is exceeded at any monitoring site, as indicated in Appendix L § 1.1(b) of 40 C.F.R. Part 51 and in Figure 4:

Figure 4. Alert Status Concentration Levels

Pollutant	Level	Averaging Time
Sulfur dioxide	800 µg/m^3 (0.30 ppm)	24-hour average
Particulate matter	350 µg/m^3	24-hour average
Carbon monoxide	17 µg/m^3 (15 ppm)	8-hr average
Ozone	400 µg/m^3 (0.2 ppm)	1-hour average

In addition, adverse meteorological conditions would be such that pollutant concentrations can be expected to remain at the above levels or higher for the next twelve hours or more or, in the case of ozone, the situation is likely to occur within the next 24 hours unless control actions are taken.

According to 40 C.F.R. Part 58 (64 Fed. Reg. 42530, August 4, 1999), the Air Quality Index Rule, these levels correspond to an AQI value of over 201 to 300, which indicates Code Purple.

3.3 Warning

A warning will be declared when air quality is continuing to degrade and additional control actions are necessary and when any one of the following levels is exceeded at any monitoring site, as indicated in Appendix L § 1.1(c) of 40 C.F.R. Part 51 and in Figure 5:

[1] http://www.airnow.gov/index.cfm?action=topics.about_airnow
[2] http://www.airnow.gov/index.cfm?action=airnow.actiondays

Figure 5. Warning Status Concentration Levels

Pollutant	Level	Averaging Time
Sulfur dioxide	1,600 µg/m^3 (0.6 ppm)	24-hour average
Particulate matter	420 µg/m^3	24-hour average (PM_{10})
	250 µg/m^{3*}	24-hour average ($PM_{2.5}$)
Carbon monoxide	34 µg/m^3 (30 ppm)	8-hr average
Ozone	800 µg/m^3 (0.4 ppm)	1-hour average

In addition, adverse meteorological conditions would be such that pollutant concentrations can be expected to remain at the above levels or higher for the next twelve hours or more or, in the case of ozone, the situation is likely to occur within the next 24 hours unless control actions are taken.

These levels correspond to an AQI value of over 300, which indicates Code Maroon.

3.4 Emergency

The emergency level indicates that air quality is continuing to degrade toward a level of significant harm to the health of persons and that the most stringent control actions are necessary. An emergency will be declared when any of one of the following levels is exceeded at any monitoring site, as indicated in Appendix L § 1.1(d) of 40 C.F.R. Part 51 and in Figure 6:

Figure 6. Emergency Status Concentration Levels

Pollutant	Level	Averaging Time
Sulfur dioxide	2,100 µg/m^3 (0.8 ppm)	24-hour average
Particulate matter	500 µg/m^3	24-hour average
Carbon monoxide	46 µg/m^3 (40 ppm)	8-hr average
Ozone	1,000 µg/m^3 (0.5 ppm)	1-hour average

In addition, adverse meteorological conditions would be such that pollutant concentrations can be expected to remain at the above levels or higher for the next twelve hours or more or, in the case of ozone, the situation is likely to occur within the next 24 hours unless control actions are taken.

These levels correspond to an AQI value of over 400, which also indicates Code Maroon.

3.5 Termination of an Event

Once declared, any status reached by application of these criteria will remain in effect until the criteria for that level are no longer met. At such time, the next lower status will be assumed.

4.0 EMISSION REDUCTION PLANS

Section 6 of the District of Columbia Air Pollution Control Act of 1984 (D.C. Official Code §§ 8-101 *et seq.* (2013 Repl.)) and the District Department of the Environment Establishment Act of 2005 (D.C. Official Code §§ 8-151.01 *et seq.* (2013 Repl.)) provide the statutory authority to

implement 20 DCMR Chapter 4 (Ambient Monitoring, Emergency Procedures, Chemical Accident Prevention and Conformity), Section 401 (Emergency Procedures). Section 401 provides the Mayor with authority to restrain any source from causing or contributing to emissions that present an imminent and substantial endangerment to public health, welfare, or the environment or to take other action as may be necessary.

4.1 Alert Level

In the AQI, Code Purple indicates that air quality is "very unhealthy." The level triggers a health alert signifying that everyone in the affected population may experience more serious health effects. Action steps are publicly encouraged, such as:

- For sensitive groups – Avoid all physical activity outdoors. Move activities indoors or reschedule to a time when air quality is better.
- Everyone else – Avoid prolonged or heavy exertion. Consider moving activities indoors or rescheduling to a time when air quality is better.
- Don't drive alone. Carpool, take public transit. Telework.
- Refuel cars in the evening.
- Put off lawn care until air quality improves. Avoid lawn mowing or use an electric mower. Don't use lawn or garden chemicals.
- Use a gas or electric grill instead of charcoal.
- Turn off lights and electronics when not in use.
- Avoid physical outdoor activity.

4.2 Warning and Emergency Levels

In the AQI, Code Maroon indicates that air quality is "hazardous." The level triggers a health warning of emergency conditions where the entire population is more likely to be affected.

- Everyone – Avoid physical activity outdoors.
- Sensitive groups – Remain indoors and keep activity levels low.

The following voluntary abatement strategies may be recommended to reduce excessive emissions:

- Persons operating fuel-burning equipment that requires boiler lancing or soot blowing should perform such operations only between the hours of 12 noon and 4 pm.
- Persons operating motor vehicles should reduce operations by the use of carpools and increased use of public transportation and elimination of unnecessary operation.

When the Director declares an emergency air pollution episode, any person responsible for the operation of a source of air pollutants as set forth in Tables 4, 5, and 6 will take actions as required for such source and will put into effect a pre-planned abatement strategy for the appropriate emergency episode level.

5.0 EPISODE COMMUNICATIONS

In the unlikely event that there would be a smog emergency in the District, staff will seek the aid of DDOE's Chief of Emergency Operations. Actions would take place based on the District's

Response Plan (December 2008, as amended), which is intended to be a living document that outlines policies and procedures that reflect the U.S. Department of Homeland Security's (USDHS's) National Response Framework (NRF). The ultimate goal of the District's Response Plan is to "protect the public and respond efficiently and effectively to significant incidents that threaten life, property, public safety, economy, and the environment in the District of Columbia." Other response plan(s) may be referenced as appropriate.